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| Technology Integration for Meaningful Classroom Use |
| Daily Lesson GAME Plan |

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| Lesson Title: What type of an effect does pollution/acid rain have on an ecosystem? | Related Lessons: What is an ecosystem? What is the water cycle? Why should we recycle? |
| Grade Level: 6th | Unit: Environmental Conservation |

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| GOALS |
| Content Standards:  Science as Inquiry   * Abilities necessary to do scientific inquiry * Understandings about scientific inquiry   Life Science   * Populations and ecosystems   Personal, resources, and environments   * Natural hazards * Risks and benefits * Science and technology in society |

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| ISTE NET-S |

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| 1.Creativity and innovation | 4.Critical thinking, problem solving, decision making |
| 2.Communication and collaboration | 5.Digital Citizenship |
| 3.Research and information fluency | 6. Technology operations and concepts |

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| Instructional Objective(s):  Students will keep an online journal of the daily occurrences in their self made ecosystems. Students will also take pictures using digital cameras and upload photos along with their daily blog entries. |

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| ACTION |
| Before-Class Preparation:  Ask the students to bring two 2 liter empty soda bottles to school. Bottles should be empty and rinsed of soda. |

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| During Class |

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| Time | Instructional Activities | Materials and Resources |
| 30 minutes | To create our ecosystem we must first follow a few steps: (teacher demonstrates each step as he/she reads them aloud.)   1. Take off any labels on the bottles. Use the scissors to cut the top off each bottle about 20 cm. (8 in) from the bottom. “We are using metric here because in science we suppose to use the metric system.” 2. Fill each bottle about halfway with soil; scatter the seeds on the top. 3. Use the watering can to sprinkle about 250 ml (1 cup) of water into each bottle. 4. Place a piece of plastic wrap over the top of each bottle; use the rubber band to keep the plastic down around the sides of the bottle. 5. Place the two bottles on a sunny, warm windowsill or near a bright lamp. 6. Label one bottle "control" and the other "test" with a permanent marker. | • two clean, clear 2-liter plastic soda bottles • scissors • clear plastic wrap • two "loose" rubber bands • some grass seed • a small pail of good old garden dirt (not potting soil)  • a ruler • marking pen and two labels |
| 15 minutes | Then I will tell the class “It will take three to five days for your ecosystems to become established, so be patient! At least once a day, you should carefully observe each bottle and record any changes that you see, including the presence of any little life-forms. Once the grass and other organisms start to materialize, try altering one of the ecosystems.” The children will have a journal where they record their observations. The students will also create a daily blog site where they share the same information in their journal on their blog along with images. | • lab journal • computer with internet access to blogger.com  • digital camera |
| 15-20 minutes for the next 5 school days | Remove plastic wrap and water both the control and the experimental ecosystems every other day. Record observations of what you see in your ecosystems in your journals and update your daily blogs. Also take pictures of both ecosystems and upload them to the blog as well. | • a small watering can with clean tap water  • lab journal • computer with internet access to blogger.com  • digital camera |
| 15-20 minutes for the next 5 school days | After 5 days continue with the following:   1. Uncover the plastic wrap from your two ecosystems. 2. Sprinkle a half cup of tap water over the "control" ecosystem every other day. Over the "experimental" ecosystem, sprinkle a half cup of pure water mixed with 2 tablespoons of concentrated lemon juice every other day. 3. Leave the plastic wrap off the top of the bottles. 4. Carefully observe each ecosystem daily and list all the changes and organisms you see in your journal as well as on your daily blog. | • a small watering can with clean tap water  • a small watering can with concentrated lemon juice in water  • lab journal • computer with internet access to blogger.com  • digital camera |
| Last class period of observations: 45 minutes | On the last days students will answer the following questions in their lab journals and on their daily blogs.   1. What type of an effect did "acid rain" (or lemon juiced water) have on your ecosystem? 2. Was your prediction that you made before the experiment correct or not? Why? 3. So from our experiment what can you say about acid rain?   A final picture of their ecosystems will also be uploaded to their blogs.  Utilizing their findings, the students will create a public service announcement that highlights the reason to recycle and not to pollute. A rubric will be utilized to assess the announcement, and I will share the expectations with the students. | • lab journal • computer with internet access to blogger.com  • digital camera  • computer with video-editing software such as iMovie (Apple) or Movie Maker (Windows)  • Rubric |

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| MONITOR |
| Ongoing Assessment(s): Use a checklist to ensure active student participation in the investigation. Periodically check the data collect on their personal blogs or in their lab notebooks. Students use a teacher-generated rubric to identify components on the daily blog and public service announcement.  Accommodations and Extensions: Provide guidance to students who are having difficulty distinguishing or observing changes in their ecosystems. If some students need assistance in managing their blogs or uploading their photos, consider placing them with a partner to complete the task. Provide digital cameras for each student to create a virtual catalog of the ecosystems. Encourage students to reduce, reuse, and recycle. |

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| EVALUATION |
| Lesson Plan Reflections and Notes: Grade the activity using a rubric for each completed component. Incorporate student suggestions for new activities or demonstrations that can show the affects of pollution on living things. |